



## PATENT ABSTRACTS OF JAPAN

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(71)Applicant: **FUJI ELECTRIC CO LTD**(72)Inventor: **KIMURA HIROSHI**  
**KAMIJO HIROSHI**(54)**OPTICAL WAVELENGTH FILTER WITH  
OPTICAL SWITCH FOR WAVELENGTH  
MULTIPLEX TRANSMISSION**

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To make an optical module low-cost by combining an optical filter and an optical switch together.

**SOLUTION:** The filter with the optical switch is constituted by cascading an optical filter 12 which transmits only specific wavelength  $\lambda_0$  among light wavelength inputs of  $\lambda_0, \lambda_1, \lambda_2, \lambda_3$ , etc., and an optical switch 13 which passes transmitted light as it is in the absence of an applied voltage, but cuts off the transmitted light in the presence of the applied voltage. When an optical module for a three-wavelength optical network unit which uses this element needs to selectively photodetect the wavelength  $\lambda_1$ , only the optical switch  $S_1$  of the optical filter  $F_1$  for the wavelength to be selected is turned OFF and the optical switches  $S_2$  and  $S_3$  of other optical filters  $F_2$  and  $F_3$  are turned ON. Only

the light  $\lambda_1$  of the wavelength of the optical filter  $F_1$  which is OFF is transmitted to a photodiode(PD) behind the optical filter and then detected by the PD. Therefore, light with arbitrary wavelength can be photodetected by only one PD to actualize a low-priced optical module.

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